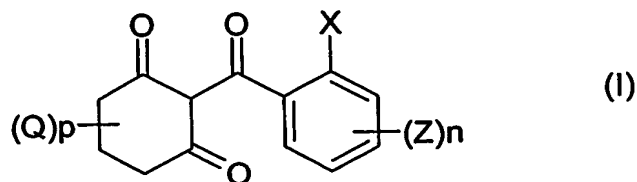


CLAIMS

1. A herbicidal composition comprising:

(i) a 2-(substituted benzoyl)-1,3-cyclohexanedione of formula (I)



wherein X represents a halogen atom; a straight- or branched-chain alkyl or alkoxy group containing up to six carbon atoms which is optionally substituted by one or more groups $-OR^1$ or one or more halogen atoms; or a group selected from nitro, cyano, $-CO_2R^2$, $-S(O)_mR^1$, $-O(CH_2)_rOR^1$, $-COR^2$, $-NR^2R^3$, $-SO_2NR^2R^3$, $-CONR^2R^3$, $-CSNR^2R^3$ and $-OSO_2R^4$;

R^1 represents a straight- or branched-chain alkyl group containing up to six carbon atoms which is optionally substituted by one or more halogen atoms;

R^2 and R^3 each independently represents a hydrogen atom; or a straight- or branched-chain alkyl group containing up to six carbon atoms which is optionally substituted by one or more halogen atoms;

R^4 represents a straight- or branched-chain alkyl, alkenyl or alkynyl group containing up to six carbon atoms optionally substituted by one or more halogen atoms; or a cycloalkyl group containing from three to six carbon atoms;

each Z independently represents halo, nitro, cyano, $S(O)_mR^5$, $OS(O)_mR^5$, (C_1-C_6) -alkyl, (C_1-C_6) alkoxy, (C_1-C_6) haloalkyl, (C_1-C_6) haloalkoxy, carboxy, (C_1-C_6) -alkylcarbonyloxy, (C_1-C_6) alkoxycarbonyl, (C_1-C_6) alkylcarbonyl, amino, (C_1-C_6) -alkylamino, (C_1-C_6) dialkylamino having independently the stated number of carbon atoms in each alkyl group, (C_1-C_6) alkylcarbonylamino, (C_1-C_6) -alkoxycarbonylamino, (C_1-C_6) alkylaminocarbonylamino, (C_1-C_6) -dialkylaminocarbonylamino having independently the stated number of carbon atoms in each alkyl group, (C_1-C_6) alkoxycarbonyloxy, (C_1-C_6) -alkylaminocarbonyloxy, (C_1-C_6) dialkylcarbonyloxy, phenylcarbonyl, substituted phenylcarbonyl, phenylcarbonyloxy, substituted phenylcarbonyloxy,

phenylcarbonylamino, substituted phenylcarbonylamino, phenoxy or substituted phenoxy;

R^5 represents cyano, $-COR^6$, $-CO_2R^6$ or $-S(O)_mR^7$;

R^6 represents hydrogen or straight- or branched-chain alkyl group containing up to six carbon atoms;

R^7 represents (C_1-C_6) alkyl, (C_1-C_6) haloalkyl, (C_1-C_6) cyanoalkyl, (C_3-C_8) -cycloalkyl optionally substituted with halogen, cyano or (C_1-C_4) alkyl; or phenyl optionally substituted with one to three of the same or different halogen, nitro, cyano, (C_1-C_4) haloalkyl, (C_1-C_4) alkyl, (C_1-C_4) alkoxy or $-S(O)_mR^8$;

R^8 represents (C_1-C_4) alkyl;

each Q independently represents (C_1-C_4) alkyl or $-CO_2R^9$ wherein R^9 is (C_1-C_4) -alkyl;

m is zero, one or two;

n is zero or an integer from one to four;

r is one, two or three; and

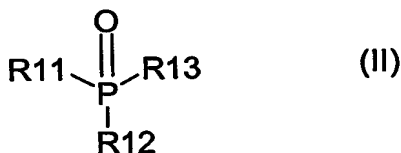
p is zero or an integer from one to six; and

(ii) an organic phosphate, phosphonate or phosphinate adjuvant at a concentration of less than 0.5% v/v when added to a spray tank as a tank mix additive or when co-formulated with a herbicide to produce a spray tank concentration of less than 0.5% v/v.

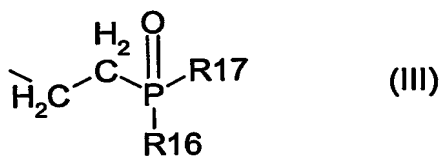
2. A herbicidal composition according to claim 1, wherein X is chloro, bromo, nitro, cyano, C_1-C_4 alkyl, $-CF_3$, $-S(O)_mR^1$, or $-OR^1$.
3. A herbicidal composition according to any one or claims 1 or 2, wherein each Z is independently chloro, bromo, nitro, cyano, C_1-C_4 alkyl, $-CF_3$, $-OR^1$, $-OS(O)_mR^5$ or $-S(O)_mR^5$.
4. A herbicidal composition according to any one of claims 1 to 3, wherein n is one or two.
5. A herbicidal composition according to any one of claims 1 to 4, wherein p is zero.

6. A herbicidal composition according to any one of claims 1 to 5, wherein the compound of formula (I) is selected from the group consisting of 2-(2'-nitro-4'-methylsulphonylbenzoyl)-1,3-cyclohexanedione, 2-(2'-nitro-4'-methylsulphonyloxy benzoyl)-1,3-cyclohexanedione, 2-(2'-chloro-4'-methylsulphonylbenzoyl)-1,3-cyclohexanedione, 4,4-dimethyl-2-(4-methanesulphonyl-2-nitrobenzoyl)-1,3-cyclohexanedione, 2-(2-chloro-3-ethoxy-4-methanesulphonylbenzoyl)-5-methyl-1,3-cyclohexanedione and 2-(2-chloro-3-ethoxy-4-ethanesulphonylbenzoyl)-5-methyl-1,3-cyclohexanedione.

7. A herbicidal composition according to any one of claims 1 to 6, wherein the phosphate, phosphonate or phosphinate adjuvant is a compound of formula II



- wherein R^{11} is an alkoxy group containing from 4 to 20 carbon atoms or a group $-\text{[OCH}_2\text{CHR}^{14}]_t\text{-OR}^{15}$ wherein R^{14} is hydrogen, methyl or ethyl, t is from 0 to 50 and R^{15} is hydrogen or an alkyl group containing from 1 to 20 carbon atoms; and R^{12} and R^{13} are independently (i) an alkyl or alkenyl group containing from 4 to 20 carbon atoms; (ii) optionally substituted phenyl; (iii) an alkoxy group containing from 4 to 20 carbon atoms or (iv) a group $-\text{[OCH}_2\text{CHR}^{14}]_t\text{-OR}^{15}$ as herein defined; or (v) a group of formula (III)



- wherein R^{16} is an alkoxy group containing from 4 to 20 carbon atoms or a group $-\text{[OCH}_2\text{CHR}^{14}]_t\text{-OR}^{15}$ as herein defined and R^{17} is an alkyl group containing from 4 to 20 carbon atoms, optionally substituted phenyl, an alkoxy group containing from 4 to 20 carbon atoms or a group $-\text{[OCH}_2\text{CHR}^{14}]_t\text{-OR}^{15}$ as herein defined; and wherein t is from 0 to ten.

8. A herbicidal composition according to claim 7, wherein the compound of formula (II) is a phosphate in which R^{11} , R^{12} and R^{13} are all independently alkoxy groups.

9. A herbicidal composition according to claim 7, wherein the compound of formula (II) is a phosphonate in which R^{11} and R^{12} are both independently alkoxy groups and R^{13} is an alkyl, alkenyl or optionally substituted phenyl group.
- 5 10. A herbicidal composition according to claim 7, wherein the compound of formula (II) is a phosphinate in which R^{11} is an alkoxy group and R^{12} and R^{13} are both independently an alkyl, alkenyl or optionally substituted phenyl group.
11. A process for the control of weeds, said process comprising applying to the locus of the weeds a herbicidally effective amount of a composition as claimed in any one of claims 1 to 10.